LM/69 SCIENZE AGRARIE E AMBIENTALI

Advances in tree and arable crops management
9 CFU in 3 moduli – II semestre

Prof.ssa Maria Nicolina Ripa: Earth observation for rural landscape - 3 CFU

Principles of remote sensing: for Earth Observation: Lectures

- the electromagnetic spectrum and its relation with incoming and outgoing radiation to and from the Earth
- principal sensorsusable for various types of remotely sensed Earth observations
- the principles and operational missions in the field of remote sensing
- the basic image characteristics required for various Earth applications, over land, ocean and atmosphere
- the processing and distribution of Earth observation data.

Principles of remote sensing: for Earth Observation: Practical

- Image processing: radiometric and geometric correction
- Digital Image processing: spatial filtering, contrast enhancement, indices calculation.
- Thematic classification

Prof. Raffaele Casa: Precision agriculture in arable crops - 3 CFU
Introduction to precision agriculture
Assessment and management of spatial and temporal variability of soil and crop variables: introduction to geostatistics
Monitoring technologies for precision agriculture applications: remote and proximal sensing of soil and vegetation. Yield mapping systems.
Management technologies for precision agriculture: variable rate application.
Case studies: precision sowing, fertilization and weed management.

Prof. Rosario Muleo: New woody fruit crop management - 3 CFU

Intercross between plant characters (physiological, biochemical, morphological and structural) and sensor visions. Molecular, Physiological and biochemical bases for: Light Radiation: absorbance, reflectance, transmittance; Fluorescence; Visible and NIR vision; Thermal; Mechanical consistence and damage.
Sensors and Machine Vision: No-destructive systems for fruit growth and maturation; Assessment of woody fruit crop water status and mapping orchard by thermal and multispectral imagery using different vehicles; Automatic sprayers, pruning and soil tilling
Automating Orchards. Systems for precision orchards managements, vineyards and fruit crop. Innovative device to cultural practices. Thinning flower and fruitlets. Fruits Harvesting Robots (New harvester for Intensive and Superintensive orchards. Harvesting Robots; Phytological Characteristics; Manipulator).
Agamic Propagation Robots. Cutting; Micropropagation, Grafting
Nanotechnology new delivery functional molecules